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BEUSSE WOLTER SANKS MORA & MAIRE, P. A.
390 NORTH ORANGE AVENUE
SUITE 2500
ORLANDO, FL 32801

EXAMINER	
DIRAMIO, JACQUELINE A	

ART UNIT	PAPER NUMBER
1641	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/530,464	NYLESE, TARA	
	Examiner	Art Unit	
	Jacqueline DiRamio	1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 October 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,10-21 and 25-59* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 10-21 and 25-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 April 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Status of the Claims

Applicant's amendments to claims 1, 10, and 20 are acknowledged, as well as cancellation of claims 2 – 9 and 22 – 24, and the addition of new claims 25 – 29.

Currently, claims 1, 10 – 21, and 25 – 29 are pending and under examination.

Withdrawn Rejections

All previous rejections of the claims under 35 U.S.C. 102 and 103 are withdrawn in view of Applicant's amendments and arguments filed October 31, 2007.

Response to Arguments

Applicant's arguments, see p8-11, filed October 31, 2007, with respect to the rejection(s) of the claim(s) under 35 U.S.C. 102 have been fully considered and are persuasive. Applicant's arguments that the amendments to the claims are not taught by the previously applied references are found persuasive, specifically in regard to the amendments requiring: (1) "comparing of a visually observable response induced in the first device at the first time directly with a visually observable response induced in the second test device at a second time to provide information about a change in the level of analyte concentration between the two times;" and (2) "wherein indications of presence of analyte in the first sample and indications of presence of analyte in the second sample provide evidence as to whether there has been a change in analyte level between the first time and second time." Therefore, the rejections have been

withdrawn. However, upon further consideration, a new ground(s) of rejection is made and presented below.

NEW GROUNDS OF REJECTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 20, 21, 25 and 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Toranto et al. (US 2003/0175992).

Toranto et al. teach a method of determining, between two times, a change in a level of concentration of an analyte present in a source, comprising:

providing multiple unitary test devices, each unitary test device including a plurality of test regions, each test region responsive at a different sensitivity level to indicate the presence of the analyte in the source;

bringing a first sample from the source into contact with a first of the unitary test devices at a first time to induce, at the first time, a visually observable response in one or more regions of the first test device based on the source containing a minimum level of analyte concentration; and

subsequently bringing a second and different sample from the same source into contact with a second of the unitary test devices at a second time to induce at the second time, a visually observable response in one or more regions of the second test device based on the source containing a minimum level of analyte concentration; and

comparing a visually observable response induced in the first test device at the first time directly with a visually observable response induced in the second test device at the second time to provide information about a change in the level of analyte concentration between the two times (see Figures 1, 3, and 12b; and paragraphs [0006]-[0009], [0011], [0019], [0027], [0054]-[0057], [0059], [0088], [0093], [0098], [0101], [0102], [0109], [0118], [0125], [0126], [0146], [0151], [0156], [0165], and [0175]).

With respect to Applicant's claims 20 and 25, the limitations of these claims are discussed above with respect to Applicant's claim 1.

With respect to Applicant's claim 21, the step of providing one of the test units includes adhesively mounting the multiple regions on a substrate (see Figures 1-3; and paragraphs [0096], [0100]-[0107], [0113], and [0156]).

With respect to Applicant's claim 29, the step of providing the one or more test units includes forming the test units separate and apart from one another (see Figures 3 and 12b; and paragraphs [0008], [0019], [0027], [0055], [0056], [0059] and [0126]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 10 – 16, 19 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boehringer et al. (WO 98/39657) in view of Toranto et al. (US 2003/0175992).

Boehringer et al. teach a lateral flow assay method for monitoring changes in analyte concentration (level) in a sample (source), the method comprising:

defining multiple measurable distinguishable sensitivity level each indicative of a different amount, i.e. concentration, of analyte in the source;

providing first and second test units,

the first test matrix (unit) including a first capture line (region) thereon responsive to the presence of analyte in the sample at a first of the sensitivity levels;

the second test matrix (unit) including a first capture line (region) thereon responsive to the presence of analyte in the sample at a second of the sensitivity levels;

providing a first sample from one source at a first time;

bringing the first sample into contact with the first test matrix to allow the first capture line thereon to provide an indication as to whether analyte is present in the sample at at least the first level;

providing a second sample from the same source on an occasion subsequent to providing the first sample; and

bringing the second sample into contact with the second test matrix to allow the first capture line thereon to provide an indication as to whether analyte is present in the second sample at at least the second level (see Figure 3; and p4, lines 22-38; p5, lines 1-2; p6, lines 26-34; p13, lines 27-37; p14, lines 6-27; p15, lines 29-32; p23, lines 7-25; p29, lines 35-38; p30, lines 1-21; Example 6 on p48; and "Multiple lane lateral flow test devices" on p52-54).

However, Boehringer et al. fail to teach that the indications of presence of analyte in the first sample and the indications of presence of analyte in the second sample provide evidence as to whether there has been a change in analyte level between the first and second time.

The Toranto et al. reference, which was discussed in the 102(e) rejection above, teaches a test system for detection of a variety of analytes in saliva. The test system comprises a single device to test for the presence of a particular analyte of interest. The system also includes storage for a multiplicity of test units that can be accessed and used on one or more occasions, e.g. on one or more separate days, weeks or months. The multiplicity of test units allows for individuals to use more than one assay

test on a given occasion, for example, to determine if their analyte concentration has increased or dropped over time. This type of system wherein the test units can be accessed on separate occasions is important for analytes whose concentrations change over time and need to be monitored, such analytes include alcochol, gluocose, ketones, cancer markers (e.g. PSA), illicit compounds, caffeine, hormones, and pathogens (see paragraphs [0055], [0056], [0059], [0126] and [0146]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include with the method of Boehringer et al. the use of the separate test units to indicate a change in analyte level between the first and second time as taught by Toranto et al. because Toranto et al. teach the benefit of including multiple test units in a system in order to allow individuals to use more than one assay test on a given occasion, for example, to determine if their analyte concentration has increased or dropped over time, which is important for analytes whose concentration changes over time and need to be monitored, such analytes including alcohol, glucose, ketones, cancer markers (e.g. PSA), illicit compounds, caffeine, hormones, and pathogens.

With respect to Applicant's claims 11 – 13, Boehringer et al. teach that the first test matrix can include a second capture line responsive to presence of the second level of analyte and the step of bringing the first sample into contact with the first test matrix includes providing said second capture region an opportunity to indicate the presence of analyte in the sample at at least the second level, wherein the second capture line is a

measurably distinguishable sensitivity level different than the first of the sensitivity levels, or wherein the first and second sensitivity levels are the same (see Figure 3; and p6, lines 1-7; p13, lines 27-30; p14, lines 6-27; p15, lines 29-32; Example 1 on p39; and Example 6 on p48).

With respect to Applicant's claim 14, Boehringer et al. teach that the second test matrix includes a second capture line thereon responsive to the presence of the analyte in the source at the first of the sensitivity levels (see Figure 3; and p6, lines 1-7; p13, lines 27-30; p14, lines 6-27; p15, lines 29-32; Example 1 on p39; and Example 6 on p48).

With respect to Applicant's claims 15 and 16, Boehringer et al. teach that the first and second test matrices can include forming thereon at least three capture lines each responsive to the presence of the analyte in the source at a different of the multiple distinguishable sensitivity levels (see Figure 3; and p6, lines 1-7; p13, lines 27-30; p14, lines 6-27; and p15, lines 29-32).

With respect to Applicant's claim 19, Boehringer et al. teach that the step of defining the multiple measurably distinguishable sensitivity levels each indicative of a different amount of analyte in the sample is accomplished by forming at least the first capture lines (see Figure 3; and p4, lines 22-38; p5, lines 1-2; and p6, lines 26-30).

With respect to Applicant's claim 29, Toranto et al. teach that the step of providing the one or more test units includes forming the test units separate and apart from one another (see Figures 3 and 12b; and paragraphs [0008], [0019], [0027], [0055], [0056], [0059] and [0126]).

Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boehringer et al. (WO 98/39657) in view of Toranto et al. (US 2003/0175992), as applied to claims 10 and 16 above, and further in view of Cole (US 6,656,745).

The Boehringer et al. and Toranto et al. references, which were discussed in the 103(a) rejection above, fail to teach that at least one of the three regions of the first matrix (unit) is responsive to substantially the same level of analyte as one of the three regions in the second matrix (unit), or that each of the regions of the first matrix is responsive to substantially the same level of analyte as one of the regions of the second.

Cole teaches a device and method for multi-level, semi-quantitative immunodiffusion assay. The device utilizes a plurality of binding zones wherein the concentration of binding agent immobilized determines a sensitivity of a given binding zone. Individual binding zones can be reactive for pre-determined levels of analyte in a sample, i.e. each binding zone has a specified concentration of binding reagent. Therefore, the binding zones allow for testing of an analyte over a broad range of concentration. The device normally involves a three-binding zone device or "tri-level test." The number of levels can be tailored in combination with the concentration of binding reagents to alter the sensitivity of the semiquantitative analysis depending on the particular application or desired precision. The device can detect for the presence or absence of the analyte, i.e. by determining trace levels of the analyte, as well as the semiquantitative amount of analyte present. Thus, the device is beneficial to screen for detection and progress of a particular medical condition, e.g. one threshold level can

indicate that the condition is at a preliminary stage, whereas another threshold amount can indicate that the condition is in an advanced state. Such devices are beneficial for testing of analytes that occur in a range, such as prostate specific antigen (PSA) or pregnancy hormone (HCG), whose concentration range determines what, if any medical action is necessary (see column 5, lines 16-67; column 6, lines 7-48; and column 7, lines 16-50).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include substantially the same sensitivity level in one of the three regions found in both the first and second matrices of Boehringer et al. and Toranto et al. as taught by Cole because Cole teaches the benefit of using a "tri-level test" wherein one of the three regions tests for trace levels of the analyte in order to determine if the analyte is in fact present or absent within the sample. It also would have been obvious to create the regions of the first unit to be responsive to substantially the same level of analyte as only one of the regions of the second in order to allow for testing of an analyte over a broad range of concentration as taught by Cole because Cole teaches the benefit of semiquantitative testing of analytes that occur in a range, such as prostate specific antigen (PSA) or pregnancy hormone (HCG), whose concentration range determines what, if any medical action is necessary.

Claims 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toranto et al. (US 2003/0175992) in view of O'Connor et al. (US 2003/0124737).

The Toranto et al. reference, which was applied in the 102(e) rejection above for claim 25, fails to teach that the devices are configured to indicate presence of chorionic gonadotrophin, wherein the sample is taken on the second occasion as least one day, or at least 72 hours, after the first occasion.

O'Connor et al. teach a method of predicting pregnancy outcome by determining the amount of molecular isoforms of hCG (human chorionic gonadotropin) in a sample. The various levels of hCG isoforms in blood and urine samples from a pregnant woman change depending on the day or month. In particular, the level of certain hCG isoforms in blood and urine samples at various points of the pregnancy have been found to possibly indicate the cause of early pregnancy loss (see Figures 6, 7, and 9 - 11; and paragraphs [0008]-[0010], [0043], [0060], [0061], [0067], [0074], and [0075]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include with the method of Toranto et al. the change in concentration of chorionic gonadotropin over a certain period of time as taught by O'Connor et al. because O'Connor et al. teach the importance of measuring hCG (chorionic gonadotropin) levels in blood and urine samples from pregnant women because the concentration levels of various isoforms of hCG in the blood and urine samples change over time, and it has been found that the level of certain hCG isoforms at various points of the pregnancy may indicate the cause of early pregnancy loss.

Conclusion

No claims are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacqueline DiRamio whose telephone number is 571-272-8785. The examiner can normally be reached on M-F 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jackie DiRamio
Patent Examiner
Art Unit 1641

LONG V. LE 01/07/08
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600